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EXAMINER	
ODOM, CURTIS B	

ART UNIT	PAPER NUMBER
2634	9

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/496,793	Applicant(s) JABBAR ET AL.	
	Examiner Curtis B. Odom	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/3/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-17 and 19-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,2 and 29* is/are allowed.

6)☒ Claim(s) *3-8,10-17,19-28,30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 February 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: The phrase "the PLL" is suggested to be changed to "a PLL". Appropriate correction is required.

2. Claim 10 is objected to because of the following informalities: The phrase "claim 31" is suggested to be changed to "claim 3". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 3-8, 10-17, 19-26, 28, 30, and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 3-8, 10-26, 28, 30, and 31 recite the limitation "phase-locked loop" or "PLL". However, after reviewing the specification (particularly Fig. 7, page 20, line14-page 21, line 19), the phase-locked loop (Fig. 7) from which this claim makes reference is actually not a loop. There is a loop formed using the

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 25 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Aslanis et al. (previously cited in Office Action 4/22/2003).

Regarding claim 25, Aslanis et al. discloses system for timing recovery at the receiver in a DMT communications system (Fig. 1) comprising:

an ADC (Fig. 1, block 32, column 5, lines 15-19) configured to create a digital representation of the received signal;

an equalizer (Fig. 1, block 34, column 5, lines 15-23) in communication with ADC configured to perform a time-domain equalization on the received signal;

a DFT (Fig. 1, block 38, column 5, lines 27-31) in communication with the equalizer, the DFT configured to convert the time-equalized received signal and to generate a pilot tone phase error estimate signal;

a symbol synchronizer (Fig. 1, block 36, column 5, lines 23-27) in communication with the ADC configured to remove a cyclic prefix from the signal sample stream; and

a phase locked loop (Fig. 1, blocks 40, 50, 52, 46, 32, 34, 36, and 38, column 5, lines 13-27) in communication with the ADC and DFT configured to receive pilot tone phase error estimate and to apply a control signal to the ADC, wherein the received signal

sample stream is synchronized for further processing at a rate compatible with that of a source transmission.

Regarding claim 26, Aslanis et al. discloses the system of claim 25, further comprising:

a sampling clock (Fig. 1, line 44, column 5, lines 46-60 and column 6, lines 13-17) in communication with the ADC, the sampling clock in further communication with a DAC in an upstream data path for synchronizing data transmitted in the reversed direction to the far-end transmission unit.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3-6 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aslanis et al. (previously cited in Office Action 4/22/2003).

Regarding claim 3, Aslanis et al. discloses a method for timing recovery at the receiver in a DMT communications system (Fig. 1) comprising:

receiving (Fig. 1, block 12, column 3, lines 60-66) and column 5, lines 15-16) a plurality of signals generated and transmitted by an associated far-end transmission unit;

converting (Fig. 1, block 32, column 5, lines 15-19) the plurality of received signals through an ADC;

detecting (Fig. 1, block 50, column 6, lines 19-27) a phase error between a received pilot tone and a phase reference signal;

applying (Fig. 1, blocks 46, column 6, lines 13-19 and 23-27) the phase error signal from a PLL to the ADC to modify the sampling time of the ADC.

Aslanis et al. does not disclose the phase reference signal is a local oscillator signal.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the local oscillator of the claimed invention produces a reference signal for comparison with the pilot tone to produce a phase error signal (pg. 21, line 3-7, instant specification) that the phase reference signal produced from the pilot tone phase reference block (Fig. 1, block 56, column 6, lines 19-27) is functionally equivalent to the reference signal of the claimed invention. The reference signal of Aslanis et al. must also comprise of oscillations in order to determine a pilot tone phase error. Thus, the phase reference block of Aslanis et al. performs the function of producing a local oscillating signal for use with a received pilot tone to produce a phase error. Thus, claim 1 does not constitute patentability.

Regarding claim 4, Aslanis et al. discloses the method of claim 3, wherein the detection of phase error is compensated by an offset based on the received signal segment in the initialization sequence (column 5, lines 59-67 and column 6, lines 19-27), wherein frame synchronization is an initialization process (column 1, lines 59-67 and column 2, lines 1-3).

Regarding claim 5, Aslanis et al discloses the method of claim 3, wherein the step of detecting a phase error is performed with a state machine in communication with the

ADC output and the input to the PLL (Fig. 1, block 50, column 6, lines 19-27), wherein the phase comparator is a state machine in that it detects a phase error.

Regarding claim 6, Aslanis et al. discloses a method of claim 3, further comprising synchronizing a DAC in the transmitting path by using a sampling clock derived from the PLL controlled ADC (column 5, lines 46-60).

Regarding claim 27, Aslanis et al. discloses system for timing recovery at the receiver in a DMT communications system (Fig. 1) comprising:

means for receiving (Fig. 1, block 12, column 3, lines 60-66, column 5, lines 15-16 and 56-60 and column 6, lines 3-12) a pilot tone generated and transmitted by an associated far-end transmission unit;

means for converting (Fig. 1, block 32, column 5, lines 15-19) the received pilot tone along with other received signals from an analog to a digital signals;

means for detecting (Fig. 1, block 50, column 6, lines 19-27) a phase error on the received pilot tone and a phase reference signal; and

means for using (Fig. 1, block 46, column 6, lines 13-19) the phase error to modify the ADC timing.

Aslanis et al. does not disclose the phase reference signal is a local oscillator signal.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the local oscillator of the claimed invention produces a reference signal for comparison with the pilot tone to produce a phase error signal (pg. 21, line 3-7, instant specification) that the phase reference signal produced from the pilot tone phase reference block (Fig. 1, block 56, column 6, lines 19-27) is functionally

equivalent to the reference signal of the claimed invention. The reference signal of Aslanis et al. must also comprise of oscillations in order to determine a pilot tone phase error. Thus, the phase reference block of Aslanis et al. performs the function of producing a local oscillating signal for use with a received pilot tone to produce a phase error. Thus, claim 27 does not constitute patentability.

Allowable Subject Matter

9. Claims 1, 2, and 29 are allowable over prior art because related references do not disclose generating signal segments REVERB and SEGUE using an initial pattern that minimizes pilot tone phase offsets and a symbol synchronizer for zeroing out a signal stream when a cyclic prefix is present in the signal stream to create a frequency correction signal.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
July 22, 2004

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